

REMARKS

Claims 1-18 are pending in this application. Claims 19-23 were canceled in a previous Amendment.

No amendments are made in this paper and no new matter is added.

For at least the reasons set forth below, withdrawal of all outstanding rejections is respectfully requested.

Prior Art Rejections

Claims 1-3 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. US 20030210074 A1 ("Morgan *et al.*", hereafter Morgan).

Claims 4-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Morgan as applied to claims 1 and 2.

The Applicants respectfully traverse these rejections.

1. Patentability of independent claim 1 over Morgan

Claim 1 reads as follows (underlining added for emphasis):

1. A circuit for signal transmission, said circuit comprising: a current source; a current sink having a current control terminal; a current steering circuit having a pair of output nodes, said current steering circuit being arranged to receive current from the current source and to pass current to the current sink, and said current steering circuit being configured to provide a differential signal to a load connected across the output nodes; and a control circuit including a voltage regulator, said voltage regulator being configured to produce a regulated voltage based on a comparison between a reference voltage and an offset voltage, wherein the current control terminal of the current sink is arranged to receive the regulated voltage.

In the present application, the control circuit 110, 120 regulates output common-mode voltage by comparing a reference voltage V_{ref} with an offset voltage V_{off} and biasing current sink transistors NC0 – NC4. Specifically, current control terminals of the current sinks NC0 – NC4 receive a regulated voltage produced by the voltage regulator X1 of the control circuit 110, 120. See Figures 9-11 and paragraphs [0035], [0043] and [0044] of the specification.

In the various embodiments described in Morgan, the VOD is regulated by performing a voltage comparison between a V_{refvod} (a representative value of VOD) and a V_{ref} (a predetermined value that corresponds to an expected V_{refvod}) and then adjusting the level of I_{source} and I_{sink} . An increase in at least one of I_{source} and I_{sink} causes an increase in VOD. A decrease in at least one of I_{source} and I_{sink} causes a decrease in VOD. Specifically, VOD regulation is accomplished first by adjusting current signals I_{vod-} and I_{vod+} according to the differential between V_{refvod} and V_{ref} . If VOD is low, then I_{vod+} is generated, and if VOD is high, I_{vod-} is generated. Both currents I_{vod+} and I_{vod-} are transmitted to a V_{cm} control circuit 124, 270 that responds to I_{vod+} by increasing I_{ctrl} to the V_{cm} regulator 118, 230. V_{cm} control circuit 124, 270 responds to I_{vod-} by decreasing I_{ctrl} to the V_{cm} regulator 118, 230. V_{cm} regulator 118, 230 responds to changes in I_{ctrl} by generating a balanced increase or decrease in currents $I_{sourcedelta}$ and $I_{sinkdelta}$. Source/Sink current control 112, 240 and 242 combines $I_{sourcedelta}$ with $I_{sourcenom}$ and also combines $I_{sinkdelta}$ with $I_{sinknom}$. Both $I_{sourcenom}$ and $I_{sinknom}$ are supplied by current generator circuit 128, 150. The two current combinations output from the source/sink current controller 112, 240 and 242 are referred to as $I_{sourceref}$ and $I_{sinkref}$ and both are transmitted to output stage 160, 280. Output stage 160, 280 generate I_{source} and I_{sink} and both currents are derived from $I_{sourceref}$ and $I_{sinkref}$, respectively. See Figures 3-6 and paragraphs [0017], [0022], [0024] – [0027], [0030] – [0035] and [0038] – [0041] of Morgan.

Also, in the various embodiments described in Morgan, the V_{cm} (common mode) is regulated by performing a voltage comparison between a V_{cm} signal sensed from the circuit and a V_{bg} (band gap reference) in the V_{cm} regulator 118, 120 and then adjusting the division of I_{ctrl} between $I_{sourcedelta}$ and $I_{sinkdelta}$. Changes in $I_{sourcedelta}$ and $I_{sinkdelta}$ have the same effect on I_{source} and I_{sink} as discussed previously. Increasing I_{source} and decreasing I_{sink} raises the level of V_{cm} while decreasing I_{source} and increasing I_{sink} lowers the value of V_{cm} . See Figures 3-6 and paragraphs [0024], [0025], [0033] – [0035] and [0038] of Morgan.

As discussed previously, I_{sink} is generated in the various embodiments in the output stage 106, 280. None of the embodiments in Morgan disclose that the circuit that generates I_{sink} receives the regulated voltage from the voltage regulator 118, 230. Thus the current control terminal of the current sink in the output stage 106, 280 does not receive the regulated voltage. To the contrary, I_{sink} (and I_{source}) are controlled via a series of intermediate current manipulations and not via a transmitted regulated voltage like that produced by X1 in the present invention. Therefore, Morgan does not disclose or suggest the element wherein the current control terminal of the current sink is arranged to receive the regulated voltage.

Therefore, the Applicants request that the Examiner reconsider and withdraw the rejection to claim 1.

2. Patentability of the dependent claims 2-9 over Morgan

The rejected dependent claims are believed to be patentable over the applied reference for at least the reason they are dependent upon an allowable base claim and because they recite additional patentable elements.

Therefore, the Applicants request that the Examiner reconsider and withdraw the rejections to claims 2-9.

Allowable Subject Matter

The Applicants thank the Examiner for indicating that claims 10-18 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. As discussed above, the Applicants respectfully submit that independent claim 1 is patentable over the applied prior art. Therefore, as claims 2-18 depend from claim 1, the Applicants further submit that claims 1-18 are in condition for allowance.

Conclusion

Insofar as the Examiner's rejections were fully addressed, the instant application is in condition for allowance. A Notice of Allowability of all examined claims is therefore earnestly solicited.

Respectfully submitted,

Shao-Jen Lim et al.

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(Date)

By:



CLARK A. JABLOON
Registration No. 35,039
AKIN GUMP STRAUSS HAUER & FELD LLP
One Commerce Square
2005 Market Street - Suite 2200
Philadelphia, PA 19103
Direct Dial: (215) 965-1293
Facsimile: (215) 965-1210

CAJ/MJ